Guessing Right for the Next War: Streamlining, Pooling, and Right-Timing Force Design Decisions for an Environment of Uncertainty

A Monograph

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2017

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
12-04-2017	Master's Thesis	JUN 2016 – MAY 2017

4. TITLE AND SUBTITLE
Guessing Right for the Next War: Streamlining, Pooling, and Right-Timing Force Design Decisions for an Environment of Uncertainty

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
MAJ Noah A. Emery-Morris

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Army Command and General Staff College
ATTN: ATZL-SWD-GD
Fort Leavenworth, KS 66027-2301

8. PERFORMING ORG REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Advanced Operational Arts Studies Fellowship, Advanced Military Studies Program.

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for Public Release; Distribution is Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

Streamlining, pooling, and task organization have formed key ingredients for not only how the Army fought World War II, but also how it continues to organize today. The genius of this conceptual mix, the combination of streamlining, pooling, and task organization, stems from the ability to avoid committing to one force design solution to modern combat. The Army after World War II shied away from temporary organizational systems like these in favor of the mirage of the ideal self-contained combat unit. Current Army forces use streamlining and pooling for many of the same reasons the Army did during World War II. Institutional reasons for pooling have crept into force design. In response to these limitations imposed on Army efficiency and effectiveness, this monograph proposes the idea of an Army task force framework can allow the Army to build around fundamental Army capabilities. Much like the Marine Corps' Marine Air-Ground Task Force, an equivalent Army task force would have components representing each of the five key attributes of Army forces: maneuver, fires, aviation, sustainment, and command. Such a structure obviates much of the negatives of using streamlining, pooling, and task organization while retaining its most important feature: adaptability.

15. SUBJECT TERMS
Streamlining; pooling; task organization; division; force design; force structure; Marine Air-Ground Task Force; Army task force; adaptable force structure

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
					MAJ Noah A. Emery-Morris
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. PHONE NUMBER** *(include area code)*
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Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

Monograph Approval Page

Name of Candidate: MAJ Noah Emery-Morris

Monograph Title: Guessing Right for the Next War: Streamlining, Pooling, and Right-Timing Force Design Decisions for an Environment of Uncertainty

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Abstract

Guessing Right for the Next War: Streamlining, Pooling, and Right-Timing Force Design Decisions for an Environment of Uncertainty, by MAJ Noah A. Emery-Morris, US Army, 36 pages.

Streamlining, pooling, and task organization have formed key ingredients for not only how the Army fought World War II, but also how it continues to organize today. In essence, streamlining pares down every unit to its essentials based around a single critical capability it provides to the combined arms team. The capabilities taken away are then pooled into formations of like type. In combat, then, the commanders on the ground can task organize those resources together based upon the environment, conditions, and enemy presented to them.

The genius of this conceptual mix, the combination of streamlining, pooling, and task organization, stems from the ability to avoid committing to one force design solution to modern combat. This mix allowed the Army to wait until combat experience taught Army leaders to understand its demands. The Army after World War II shied away from temporary organizational systems like these in favor of the mirage of the ideal self-contained combat unit.

Current Army forces use streamlining and pooling for many of the same reasons the Army did during World War II. Other institutional reasons to pool forces have crept into the force design process. These institutional requirements for force structure impose pooling on the Army in ways that it might not choose and may be limiting Army effectiveness and efficiency.

In response to these limitations imposed on Army efficiency and effectiveness, this monograph proposes the idea of an Army task force framework can allow the Army to build around fundamental Army capabilities. Much like the Marine Corps' Marine Air-Ground Task Force, an equivalent Army task force would have components representing each of the five key attributes of Army forces: maneuver, fires, aviation, sustainment, and command. Such a structure obviates much of the negatives of using streamlining, pooling, and task organization while retaining its most important feature: adaptability. In the current operational environment, the Army needs that adaptability and cannot afford the limitations imposed by institutional demands on the force structure.

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Acknowledgements

This work would not have come about without the ideas, support, and thoughtful conversations of my family, my professors, and my peers. I must first take time to acknowledge my peers at the 1st Armored Brigade, 2d Infantry Division without whose conversations I would not have had these ideas: Peter Coffman, David Gleason, Christopher Proellochs, and Charles Hurst. Next, the support of my fellow students at the Command and General Staff College as well as Seminar 8 at the School of Advanced Military Studies have proven invaluable to refining my ideas and giving me access to broad experience from throughout the force. Of the many instructors over the last two years, Dr. John Modinger, Dr. Scott Stevenson, LTC Christopher Johnson, COL Marc Spinuzzi, and Dr. Peter Schifferle have all contributed to molding these ideas and honing my understanding. Finally, to my wife Betheny and daughter Aria, without whose patience and understanding none of this would have proven possible.

Acronyms

AGF	Army Ground Forces
BCT	Brigade Combat Team
BfSB	Battlefield Surveillance Brigade
BG	Brigadier General
CAB	Combat Aviation Brigade
DIVARTY	Division Artillery
E-MIB	Expeditionary Military Intelligence Brigade
GEN	General
MAGTF	Marine Air-Ground Task Force
MEB	Maneuver Enhancement Brigade
MG	Major General

Introduction

On August 7th, 1944, Lieutenants Charles Barts and Robert Weiss, the forward observers with 2d Battalion, 120th Infantry Regiment looked out from their position on Hill 317. As the fog lifted, they saw in the clear morning sunlight the bulk of the XLVII Panzer Corps along the lower ground to the east. This opportunity presented itself, not only because of the actions of that one battalion, but as the culmination of the actions the entire US military establishment. The movement of the 30th Infantry Division into its positions had required trucks from First Army. At 2d Battalion's disposal, twelve battalions of artillery, from neighboring divisions, VII Corps, and First Army, all fired non-stop time-on-target missions. The 30th Infantry Division also received reinforcing infantry and tank units to counter-attack the advancing German troops. The whole US Army swung into action to support the defense of Mortain and the 2d Battalion would defend this position for the next five days and exact a terrible toll on the attacking Germans.[1]

The Battle of Mortain reflected the US Army in World War II at its best.[2] It defined US Army success in the European theater of operations and wherever the US Army found victory, it came about through a very similar formula. A seemingly isolated American unit, with enormous complementary forces flexibly massed, defeated a German panzer force. These complementary forces included field artillery, engineering specialties, truck mobility and logistics capabilities,

[1] Mark J. Reardon, *Victory at Mortain: Stopping Hitler's Panzer Counteroffensive* (Lawrence: University of Kansas Press, 2002), 48. Martin Blumenson, *Breakout and Pursuit* (Washington, DC: Center of Military History, 1993), 457-492, specifically, the forward observers discussed in detail on 488. Carlo D'Este, *Decision in Normandy* (New York: E.P. Dutton, Inc., 1983), 418-420. The details provided in Brigadier General James Lewis' after action review, in particular, reflect the mass of artillery employed. "30th Infantry Division After Action Reports," accessed on March 14, 2017, http://www.oldhickory30th.com/index.htm.

[2] Robert Citino describes Mortain as a "nonstarter that allowed the U.S. Army to do what it did better than anyone else in World War II: smother an onrushing opponent with fire." This description matches with that of the Command and General Staff paper written on the defense. Robert M. Citino, *The German Way of War: From the Thirty Years' War to the Third Reich* (Lawrence: University of Kansas Press, 2005), 269. The passage in the middle of this page describes the fires called upon by 2d Battalion, 120th Infantry Regiment as "devastating." L.R. Adair, W.H. Speer, R. Ivany, M.Q. Barbour, D.E. Taylor, and F.E Galati, "Mortain: Defensive, Deliberate Defense 30th Infantry Division, 9-13 August 1944," (Fort Leavenworth, KS: Command and General Staff College, 1983), 19.

anti-tank weapons both towed and self-propelled, tanks, and aviation support. Those moments of integration came with increasing frequency throughout the war as formations grew more experienced and developed habitual working relationships. This kind of moment did not happen by accident, however. The 30th Infantry Division and all of its supporting artillery did not become a destructive machine through natural forces. The US Army was designed to do this.

Lieutenant General Leslie McNair, commander of the Army Ground Forces Headquarters that created that army, foresaw a need for the force to adapt to modern war as one integral unit. Rather than building separate empires of combat power under disparate commands, McNair intended every unit and echelon of command to contribute materially to every fight.[3] While he may have foreseen several possible idealized force designs, he also seemed to appreciate that getting force design badly wrong could hurt far worse than only getting it half right. The trick, for McNair, became how to integrate this host of new technologies into one force at the point of contact while simultaneously building efficiencies of scale. As an artillerist, he recognized here a truth about force design that might escape another's notice: integration of all arms in a battle does not require that one tactical commander own them all organically.

The idea that the Army needed to mass specialized capabilities did not start with McNair.[4] He did, however, champion it as a key efficiency measure to overcome critical shipping limitations. The Army termed the processes employed to achieve this needed economy "streamlining" and "pooling." These two ideas, along with "task organization," formed key

[3] In this, under Marshall's orders, McNair's Armed Forces Board organized each layer of the Army organization towards accomplishing specific tasks required of the total force. The field army focused on providing intelligence and logistics and allocating forces to corps, the corps maneuvered divisions and massed other resources to them as the fight developed, and divisions won battles and engagements through combined arms. War Department, Field Service Regulation 100-15 *Larger Units* (Washington, DC: Government Printing Office, 29 June 1942) 52-58.

[4] Biddle discusses the derivation of the need for combined arms in World War I and the effects of the modern battlefield as instrumental in the creation of a "modern system" of warfare that demands specific methods of force employment for effectiveness. Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton, NJ: Princeton University Press, 2006), ix, 1-3.

ingredients for not only how the Army fought World War II, but also how it continues to organize today.[5]

In essence, streamlining pared down every unit to its essentials based around a critical capability it provided to the combined arms team. This meant that artillery units had no organic supporting infantry and infantry units nearly no organic supporting artillery. The two capabilities pooled into formations of like type. In combat, then, the commanders on the ground would task organize those resources together based upon the environment, conditions, and enemy presented to them.[6]

The genius of this conceptual mix, the combination of streamlining, pooling, and task organization, lay in that it let the Army avoid committing to one force design solution to modern combat until experience allowed Army leaders to understand its demands. Where force design became a straitjacket for some militaries, binding them into inefficient or militarily unwise tactics, for the US, it allowed the force to find the right solution for the particular circumstances of the war. It created an adaptable Army, able to respond to real needs as opposed to an imagined future. While McNair argued for this organizational philosophy on the bases of efficiency and shipping limitations, its outcome extended beyond strategic logistical concerns.

Organizational Pressures and Evolution

Today, the Army fights under a concept called 'Modularity' wherein brigade combat teams represent the centerpiece of tactical combat and the pinnacle of the integration of combined

[5] Jonathan House, *Towards Combined Arms Warfare* (Fort Leavenworth, KS: Combat Studies Institute Press, 1984), 106. Mark T. Calhoun, *General Leslie J. McNair: Unsung Architect of the US Army* (Lawrence: University Press of Kansas, 2015), 264-274.

[6] Kent R. Greenfield, Robert R. Palmer, and Bell I. Wiley, *The Army Ground Forces: Organization of Ground Combat Troops* (Washington, DC: Center of Military History, 1987), 290-299.

arms once reserved for the division level.[7] Functional and multifunctional brigades augment those brigade combat teams, but the Army sees combat power in terms of those brigade-sized formations. This reflects the commonly held belief that information age combat units must operate autonomously in a way that demands self-contained organizations. In combat, brigade combat teams may complement each other and be complemented by the actions of functional and multifunctional brigades, but they operate as separate blocks.[8] Having their own logistics, field artillery, reconnaissance, and engineering assets brigade combat teams do not often require much augmentation with the possible exception of aviation support. In comparison, then, a distinct conceptual difference exists between the Army of World War II and that of today: that of self-containment versus tactical integration.

While today's Army does have functional and multifunctional brigades that contain unique capabilities used to enhance combined arms teams, the spirit of the organization reflects a degree of self-containment wholly unlike that of World War II. The Army of World War II organized around the idea that the whole Army represented one, integrated combined arms team with no single echelon or organization having every component of that team as an organic capability. Regimental combat teams and combat commands occupied the niche that modern brigade combat teams occupy. These World War II-era units had either no organic units in the case of the combat command or very limited and specific ones in the case of the regimental

[7] These two documents reflect a clear distinction between an Army wherein the large tactical formation responsibilities lie at the division-level in 1944 and at the brigade-level in 2003. William M. Donnelly, *Transforming an Army at War: Designing the Modular Force, 1991-2005* (Washington, DC: Center of Military History United States Army, 2008), 13. War Department, Field Service Regulation 100-5 *Operations* (Washington, DC: Government Printing Office, 15 June 1944), 3-4.

[8] This concept for US Army maneuver forces uses the phrase 'semi-independent' to refer to the manner in which brigade combat teams act in parallel towards common objectives. Despite the apparent autonomy of combat commands within the armored division, this 'semi-independence' suggests an autonomy that would have been alien to the Army of 1941-1945. Armored divisions acted within the corps and army framework throughout the war receiving attachments and detachments just like the rest of the force. Department of the Army, TRADOC Pamphlet 525-3-6 *The U.S. Army Functional Concept for Movement and Maneuver* (Fort Eustis, VA: US Army Training and Doctrine Command, 2017), 20.

combat team, namely the infantry regiment. This lack of organic specialties had both benefits and drawbacks.[9] Today, the Army has attempted to create, in the brigade combat team, an idealized combined arms team that can stand on its own. This supports an opposing view of force design from that of General McNair. While the two concepts developed in parallel, the idea of self-contained combat forces has gained strength and become the dominant view since. Unfortunately, while this change has produced some advantages, it has also forsaken key advantages produced by the World War II-era system.

The World War II-era process of streamlining and pooling had a number of key beneficial effects. First, it allowed the parallel employment of Army capabilities against the enemy therefore maximizing the efficiency of the total force by allowing very little force to go unused.[10] Second, the system enabled the Army to use its differing capabilities fully in a synergistic fashion.[11] Finally, it avoided the problem created in the German establishment wherein specific formations like the panzer divisions simultaneously represented the source of the

[9] This brings up a debate within the historical community regarding the importance, value, and relative strengths of the various divisional force designs as combined arms units capable of independent action. Mansoor argues that the US Army failed to organize its divisions as effectively as it could have compared to the Germans. This misses the point that US units did not need the force-wide reorganizations the German military underwent over the course of the war. They were built-in. Doubler contends that the US system had advantages at the operational level unmatched by the German system, an argument Mansoor disagrees with but does not refute with evidence. Mansoor's focus at the regimental level and below detracts from his argument that US infantry divisions were a decisive factor for the US. John McGrath, *The Brigade: A History: It's Organization and Equipment in the US Army* (Fort Leavenworth, KS: Combat Studies Institute Press, 2004), 46-56. Peter Mansoor, *The GI Offensive in Europe: The Triumph of American Infantry Divisions, 1941-1945* (Lawrence: University Press of Kansas, 1999), 249-267. Michael Doubler, *Closing With the Enemy: How GIs Fought the War in Europe, 1944-1945* (Lawrence: University Press of Kansas, 1994) 3.

[10] The same argument supports the organization of a separate Air Force and the need to mass air power. Greenfield, et al, *The Army Ground Forces*, 113-114.

[11] Integrating, for the first time in many cases, a range of new weapons and capabilities, the Army of World War II struggled at first to mix weapon effects and capabilities. Certainly, the shock of apparent losses like that at Kasserine Pass demonstrated that much work remained to synchronize US military capabilities. Much of those early shocking losses depended upon a general lack of tactical expertise, however. Once the Army began to function properly as a team, the US Army became increasingly difficult to stop. House, *Towards Combined Arms Warfare*, 128. Mildred H. Gillie, *Forging the Thunderbolt: A History of the Development of the Armored Force* (Military Service Publishing Company: Harrisburg, PA, 1947), 237-246.

Army's greatest strength and its greatest vulnerability.[12] Taken together, these benefits made the US Army significantly more capable than its adversaries.

The organic leanness of World War II US units reflected a tension between preferences on the part of Army leaders. On one hand, leaders have a natural inclination to want all necessary tools immediately on hand and to have the largest possible organization under their direct control. On the other hand, smaller organizations have smaller staffs to manage the coordination required for combined arms maneuvers, forcing leaders at junior echelons to do more thinking themselves and in a time-constrained environment. The extent to which the World War II-era infantry formations lacked organic support capabilities reflected the particular biases and limitations imposed by Army leaders like General McNair and the shipping available at the time.[13]

Streamlining had its proponents, but the fact that the modern brigade combat teams have the mix of capabilities they do demonstrates the strength of an opposing opinion. General McNair described this as defensive attitude, seeking to protect all units rather than mass forces, and argued strenuously with men like Generals Jacob Devers and George Patton who believed equally strongly in building self-contained force packages. This distinction between self-contained force packages and one integrated force remains a point of contention today.[14]

In 2003, the US Army began its transformation to a modular force. This change involved the creation of permanent combined arms combat brigades, multi-functional support brigades, and brigades with functional specialties. The first of these, the brigade combat teams, formed the

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[12] Showalter describes how Operation Barbarossa's depth and Russian counterattacks degraded the panzer divisions. He goes on to indicate how the German Army rapidly lost its ability to either attack or maintain its counterattack-centered defense. Showalter, *Hitler's Panzers*, 192-200.

[13] Brownlee and Mullen, *Changing an Army*, 90, 92-93. Calhoun, *General Leslie J. McNair*, 264.

[14] In fact, this is one of the key points of contention regarding force design: at what echelon does the Army truly need 'self-contained' combat forces, if any. Mansoor's answer is the division, McGrath and House say the brigade, and Calhoun, to some extent, the corps or not at all. Under the right circumstances, in the right war, however, any of these answers could prove correct. Calhoun, *General Leslie J. McNair*, 268. Mansoor, *The GI Offensive in Europe*, 249-250. House, *Towards Combined Arms Warfare*, 106-110, 186, 188-190. McGrath, *The Brigade*, 131-132.

tactical fighting force of self-contained force packages that the functional brigades could augment as needed. Some units like combat aviation brigades and fires brigades intended to do so through the centralized application of their unique capabilities. Other organizations like engineer brigades and intelligence brigades deliberately organized to build capability sets with the expectation that they would augment brigade combat teams rather than fight as a separate unit.[15]

During the same period and to serve the same demand for forces in Iraq and Afghanistan, the Army implemented the Army Force Generation model known as ARFORGEN. This model created sets of forces ready for deployment overseas with the right mixture of combat, combat support, and service support units to fulfill the Department of Defense requirements for forces.[16] To create these sets, ARFORGEN rotated ready units through phases of reset, train, and ready to always have the needed forces prepared for deployment. Functional brigades like engineer brigades, then, trained units in pools of varying states of readiness with the expectation that they would not fight under their garrison headquarters, but instead support other units and in particular brigade combat teams in a modular fashion.[17]

Conceptual Value of Streamlining and Pooling

While this idea of creating pools of unique capabilities to support combat units on an as needed basis is not new or unique to the current operational environment, it would be disingenuous to read this process as too similar to that of the Armed Forces Board in World War

[15] Telford Crisco, "The Modular Force: Division Operations," *Military Review*, vol. 86, no. 1, 95-100 (Fort Leavenworth, KS: Combined Arms Center, 2006), 99. Stuart Johnson, et al, "A Review of the Army Modular Force Structure," (Santa Monica, CA: RAND National Defense Research Institute, 2011), iii.

[16] Crisco, "The Modular Force," 96.

[17] Randal Castro, "Clear the Way," *Engineer*, vol. 36, no. 2, 1-11 (Fort Leonard Wood, MO: Maneuver Support Center of Excellence, G-37 Publications, 2006), 7. Johnson, et al, "A Review of the Army Modular Force Structure," 40.

II. During World War II, the US Army practiced economy through streamlining and pooling, but did so with the intent of creating a single combined arms force for use on the continent of Europe. Given the uncertainty about how modern warfare would unfold, the force developers expected that this force would have to adapt itself to the tactical situation. While World War I had provided a glimpse into what World War II would be, much contention remained about what war needed in terms of organization.[18]

Streamlining served to strip low echelon units of capabilities that did not match their primary mission, the required unit speed over land, or the unit's likely reach or area of operations. Experience seemed to indicate that higher echelon units; with their larger staffs, greater spans of control, and wider areas of operation could better manage the application of capabilities with greater range, overland speeds, or unique missions. These reasons for streamlining worked to put capabilities on the battlefield at times and in places to support the total force, if at times sacrificing support to certain individual units. This decision reflected an understanding of the Army as more than the sum of its parts.

Experience from World War I and analyses of World War II up to that point both indicated that tactical units often lacked the resources to meet the peak requirements for certain specialties or equipment sets. Instead of providing enough of those capabilities to always meet the maximum demand, a feat General McNair saw as infeasible, the Armed Forces Board made possible the application of those capabilities on an as needed basis. The resources required to

[18] House points out that McNair intended the actual combat power of the triangular division to fluctuate but then goes on to make clear that, in combat, they often found an optimal organization and stuck to it. While, as House contends, this may seem to argue against McNair's intent, the outcome proved fortuitous in that it allowed the US Army to take shape as combat requirements demanded rather than as a result of decisions made before entry into the war. House, *Towards Combined Arms Warfare*, 106-107. McGrath, *The Brigade*, 48-50, 54-56.

meet those specialty peak demands could then flexibly shift from unit to unit depending upon which formations experienced the greatest demand.[19]

In a similar way, infantry units only needed the indirect fire weapons whose range corresponded to their expected frontage. Providing weapons to organizations that could not effectively use their fullest capabilities deprived the rest of the force of that scarce resource. With tactical doctrine as both a guide and a desired outcome of this process, the frontages of those infantry units either lengthened or shortened to meet the weapons available to that unit or reallocated weapons to an echelon more appropriate to their use. As a result, the Armed Forces Board, in creating the tables of organization and equipment, provided those long-range weapons to the infantry company, battalion, regiment, and division that could cover expected frontages. The same held true for the heavy artillery systems when compared to the frontage of regiments and divisions.

Speed also affected what capabilities could or could not work within an infantry unit. Some capabilities like armor and cavalry units moved quickly enough to require significantly more terrain than an infantry unit of similar size. Similarly, other capabilities like hospitals and depots moved much slower, if at all, and would have significantly impaired the mobility of the average infantry division if assigned to them. As a result, the Armed Forces Board streamlined divisions by removing these capabilities with significantly different mobility profiles and grouped them into pools held at corps and army levels.[20]

Modern force pooling in the US Army does use some of the same ideas and does stem from some of the same reasoning as that of the World War II-era Army. Generally, the less often a capability proves necessary in the tactical fight, the further from tactical units it can reside in the

[19] Greenfield, et al, *The Army Ground Forces*, 291. House, *Towards Combined Arms Warfare*, 106-107. Calhoun, *General Leslie J. McNair*, 210-211.

[20] R.R. Palmer, *Reorganization of Ground Troops for Combat* (Washington, DC: Historical Section, Army Ground Forces, 1946), 16-17.

organization. As a result of this logic, the contemporary Army pools certain weapons and resources in functional and multi-functional brigades rather than assign them permanently to brigade combat teams. That does not suggest, however, that modularity represents a similar design philosophy. The underlying logic for the modular Army revolves around self-contained brigades. This contrasts sharply with the whole-of-Army approach used by General McNair to prepare the Army to adapt. Similarly, while the same range-to-frontage arguments may hold regarding the modular force, the underlying philosophy for the organization of the force remains starkly different.

In the modern context, the range-to-frontage argument applies in the case of Multiple-Launch Rocket Systems or MLRS, for example, whose range clearly exceeds the frontage of a brigade combat team.[21] Long-range artillery systems like this do not make much sense in low-level tactical formations because of their ability to mass fires when controlled by higher echelons. If brigade combat teams controlled such weapons, the time necessary to coordinate their availability between sister brigades might cause the force to miss opportunities for their employment. As a result, the Army pools those capabilities into field artillery brigades for use by divisions and corps. This allows those weapons, much like the heavy artillery battalions and groups of World War II, to operate against operational targets and to mass as needed.

Similarly, aviation elements with speeds far exceeding those of brigade combat teams and logistical brigades whose footprint and displacement time, both require pooling. These capabilities, if aggregated into maneuver brigade elements, would often find themselves constrained by the speed of their parent brigade or would find themselves left behind as the

[21] Greenfield et al describe this range-to-frontage as follows: "difference in the potential frontage of weapons, with the consequent possibility of massing fires." This speaks to the notion that weapons with differing ranges can affect the same location on the battlefield from different firing points. Longer range weapons can be positioned further from the front and reach more places at the front; in some cases across small unit boundaries. The challenges in coordinating across those small unit boundaries militate for possession of those weapons at higher echelons to mitigate the time lost coordinating cross-boundary fires. Greenfield, et al, *The Army Ground Forces*, 292.

brigade moved faster than their subordinates. Those same kinds of capabilities existed outside of the combat division during World War II as well and specifically for the same kinds of reasons. The Army, then, does continue streamlining and pooling if for no other reason than that the demands for these traits continue.

As mentioned earlier, then, the philosophy of Army organization today remains substantively different from that in World War II. Today, those self-contained pieces of combat power describe a force with an abundance of capabilities, but one wherein every organization has an equal demand for those resources. This reflects some of the findings coming out of World War II wherein attached and detached forces tended to operate in a degraded state of readiness and capability due to miscommunications, differing leadership styles, and methods of employment.[22] Emphasizing this finding coming out of the war has gradually degraded the Army's ability to fight as one force against a determined conventional threat. While streamlining and pooling may have opponents who seek to provide everything to everyone, it did enable the Army in World War II to consistently generate combat power when and where it was needed most.

Pooling, therefore, brings both benefits and drawbacks. On the one side, pooling allows Army elements to mass capabilities when and where the situation dictates without wasting them where it does not. On the other, organizationally separating tactical combat units from capabilities that must support them causes friction and makes miscommunication not only possible but probable. In a massive Army of millions fighting a continental war of national survival, the efficiency benefits of pooling outweighed the risk imposed. Today, with a much smaller force, the Army must carefully balance streamlining and pooling against the demand for forces to demonstrate the proficiency attained by training organically.

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[22] Both the evaluation of the performance of the infantry division from the General Board as well as Palmer's history describe the same phenomenon of difficulties integrating attached elements. Of note, this remains an issue noted at Combat Training Centers for combat enablers attached or assigned to brigade combat teams. US Army, *Organization, Equipment, and Tactical Employment of the Infantry Division* (The General Board, United States Forces, European Theater: APO 408, 1945), 1. Palmer, *Reorganization of Ground Troops for Combat*, 18. House, *Towards Combined Arms Warfare*, 107.

The Modern Context

This leads to an analysis of the expected operational environment, demand, and operational concept for Army forces of the future. Both the Army and Joint operating concepts expect the future force to integrate components of combat power at the tactical level. At the same time, the Army Operating Concept expects the relevant Army forces to operate in a dispersed fashion while retaining the ability to rapidly mass against decisive points. This dispersal requires that necessary components of combat power coordinate at low echelons to maximize their effect on fleeting opportunities as opposed to requiring time-consuming cross-attachment and reorganization.[23] Both of these operating concepts seem to argue against large-scale pooling, at least in terms of Army forces operating at the tactical level.

Pooling in World War II focused on capabilities at the tactical level. As the 'Pooling History' section of this work will show, pooling allowed the force to mass combat resources of like-type in order to win the tactical fight. The operational environment the US Army encountered in 1942, however, allowed this massing of combat resources for a number of reasons. First, weapons of mass destruction had yet to make themselves felt and, as a result, no significant incentive yet existed for dispersal at the operational level. Second, the general level of weapon technology demanded that the penetrations and exploitations used to such great effect early in World War II rely heavily on massed forces for success. Third, the specific mix of tactical support tools arrayed at echelon reflected the technology of the day in not only weapon ranges and effects but also the communication technologies required to coordinate them.[24] These

[23] Department of Defense, *Major Combat Operations Joint Operating Concept* (Suffolk, VA: US Joint Forces Command, Department of Defense, 2006), 15. Department of the Army, TRADOC Pamphlet 525-3-1 *US Army Operating Concept: Win in a Complex World* (Fort Eustis, VA: US Army Training and Doctrine Command, 2014), 18.

[24] In this context, the phrase 'at echelon' refers to capabilities available in different forms at each layer within the organizational structure. While many layers will have some form of indirect fire support, what form that support takes will depend upon the specific layer in question: in the current context for

critical environmental differences have changed the way the Army views streamlining and pooling and have encouraged Army leaders to discount these capability-massing tools as not worth the organizational friction they impart. They remain essential elements of Army force design, however, despite the trend towards self-containment specifically because of the continued need to integrate arms effectively while balancing the efficiencies offered by mass.

The Army now sees a modern battlefield threatened by weapons of mass destruction from both state and non-state actors.[25] As originally envisioned by the Pentomic divisional structure in the 1950s, the Army must again prepare itself to distribute forces more broadly to avoid catastrophic losses from chemical, biological, radiological, and nuclear attack.[26] In this context, physically massing critical elements of combat power in pools for use in concentrated forces makes them vulnerable to simultaneous loss. This situation differs significantly from that of the 1940s wherein massed specialty units could stay out of long-range artillery fire but still reach the necessary point on the tactical battlefield when required. On the modern battlefield, units within range of ballistic missiles may not have the mobility necessary to reach the required point on the battlefield because of the incredible reach of modern missile weapons and the wide swaths of territory that modern weapons can make impassable.

Similarly, the offensive maneuver actions early in World War II could use mass because weapon lethality and ranges did not inflict prohibitive losses. Armored vehicle protection allowed forces to penetrate the same kind of defenses that had created stalemate on the Western Front in World War I. Even as World War II ended, however, the hazards of massing to affect penetrations became more obvious. Anti-tank rockets like the bazooka and *panzerfaust* combined

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example companies and battalions have mortars, brigades have artillery howitzers, and divisions and above have rocket and missile artillery.

[25] Department of the Army, ADP 3-0 *Unified Land Operations* (Fort Eustis, VA: US Army Training and Doctrine Command, 2014), 4.

[26] McGrath, *The Brigade*, 58.

with improvements in indirect fire and close air support to make such concentrations increasingly risky. Narrow-front offensives like that by the Germans against Mortain and later on at the Bulge failed to achieve their objectives in the face of deep Allied forces whose weapons could attrite German formations without suffering the catastrophic cauldron-battle losses of the early war. Modern weapons, however, can cause similar attrition without requiring the same depth as that required during World War II. Rotary and fixed-wing aviation, long-range missile and rocket artillery, and incredibly lethal direct-fire weapons can now inflict destruction not even dreamt of during World War II.[27]

The World War II-era mix of supporting direct and indirect fire weapons depended upon the technology of those weapons and the weapon range provided by that technology. As the most casualty-producing weapon, both in World War II as well as for some time into the future, artillery and other indirect fire systems represented key components of the combined arms team.[28] The use of specific indirect fire weapon systems at each echelon both reflected and helped to determine the doctrinal frontage of the units to which the Army assigned them.[29] As technology has changed, so too must the weapons assigned at echelon. So while the effective range of a 155mm howitzer may have increased, the echelon of formation best suited to take advantage of that range will not have increased but rather shifted down. Now, brigades can best employ the fire of a weapon previously reserved for divisions. While weapon range has increased, however, the ability of maneuver units to observe the fire of those weapons has not increased as dramatically.

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[27] Airland Battle, the doctrine for which these new advanced weapons first became available, addresses this combination through its description of combat power and the integration of maneuver, firepower, and protection capabilities at the point of engagement. Department of the Army, Field Manual 100-5 *Airland Battle* (Fort Eustis, VA: US Army Training and Doctrine Command) 11-13.

[28] Brownlee and Mullen, *Changing an Army*, 91.

[29] While modern, modular units do not have the same doctrine governing frontages and battlespace management of World War II, the same logic constrains tactical units. Weapons can only reach certain distances and a given number of infantry and scouts can only see so many places. Palmer, *Reorganization of Ground Troops for Combat*, 16-17.

The addition of unmanned systems has alleviated this somewhat, but a 4,500-man brigade cannot observe as much ground as can a 12,000-man division.

The same holds true for the mobility of units that has changed based upon changes in technology. While rotary-wing aviation, for example, has made many infantry units significantly more mobile, that mobility is not a panacea. Fuel demands, air defense threats, and the ability of neighboring units to continue to support such a force all limit air assault options. Therefore, while technology may have increased the mobility of US Army tactical units, rather than simply making modern units better and more capable, it has required the organization to account for the changes imposed by these new battlefield capabilities. Those changes have tended to increase the demand for tactical integration of combat capabilities while simultaneously increasing the sophistication of those units and the unique logistical and support requirements thereof. This has imposed a tension that remains unresolved today between the demand to integrate for battlefield effectiveness and the need to centralize to simplify logistics for efficiency.

World War II Pooling

Pooling and the corresponding concept of streamlining did not start with General Leslie McNair during World War II. In reality, the process of streamlining Army divisions involved a complex sequence of events occurring over decades. Therefore, while the process proved long and involved, the concepts it employed were not new. The infantry regiments of World War I had relied extensively on pooled heavy weapons and water-cooled machine guns that, at the time, lacked the mobility to keep up with the infantry as they seized enemy trench lines.[30]

In 1936, perceiving the need to modernize the force, then Army Chief of Staff General Malin Craig initiated a Modernization Board to reshape the tactical Army to fit the needs of

[30] McGrath, *The Brigade*, 32-34.

modern warfare.[31] On this board, Major General John B. Hughes and a number of other officers from the Great War compared notes and arrived at the conclusion that future war would feature open field engagements requiring mobility and the ability mass firepower. They also emphasized in their findings the requirement for the divisions to operate as part of a larger force.[32]

The streamlined and pooled army of World War II fame reflected a dialogue between two opposing camps of force design. The proponents of design efficiency like General McNair attempted to maximize output from the total force over the output of any specific echelon. By contrast, McNair's detractors argued for powerful, self-contained combat teams and emphasized what they perceived as the most important or decisive echelon or force component over efficiency for the total force.[33]

Some of the most vocal opponents of McNair's efficiencies came from the armor community. Major General Jacob Devers, commander of the Armored Force, sought to perfect the armor community's contribution to the war effort. His work led to the inclusion of spotting aircraft in the armored divisions and he fought against the large number of separate armor battalions intended to support the infantry. To his mind, for optimum efficiency the armored forces required the integration of capabilities at the lowest tactical combined-arms echelon, the division, so as to allow for self-contained, all-arms units to operate in the depth of the enemy rear areas as intended.[34]

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[31] General Malin Craig received temporary promotion to four stars for his tour as Army Chief of Staff. Henry Blaine Davis, Jr., *Generals in Khaki* (Raleigh, NC: Pentland Press, Inc., 1998), 86.

[32] Calhoun, *General Leslie J. McNair*, 156-157.

[33] In fact, both General Chaffee and General Devers argued against pooling and for self-contained armored formations. Gillie, *Forging the Thunderbolt*, 171, 267-270. Calhoun, *General Leslie J. McNair*, 268.

[34] General Devers went so far as to write to General Marshall arguing for the assignment of pooled units down to divisions as part of their organic forces. Greenfield, et al, *The Army Ground Forces: Organization of Ground Combat Troops*, 295-297.

Examples of World War II Pooling

General Devers, a fellow artilleryman and former platoon leader under McNair, also saw the importance of timely and effective artillery support. He reasoned that if observers had proven so effective from the ground, they might designate targets from the air much more effectively. At his insistence, then, the armored division artillery included eight liaison planes specifically to fulfill this niche.[35] Throughout the war, this technique for aircraft supporting ground artillery would prove one of the most popular among maneuver units. This should come as no surprise given the number of widely publicized incidents in which friendly aircraft strafed and bombed friendly ground units. Support from artillery must have seemed safer, certainly for units who used it frequently and knew its limitations.[36] Aircraft, for observation or any other mission, operate under their own restrictions and limitations, however, and those things often make them an uncomfortable fit within an armored division.

While the advantages of having spotting aircraft organic to the armored force did result in their organic assignment, it was not a foregone conclusion. Sound logic argued against their inclusion in the armored divisions as well. While light aircraft of that era did not require the large, prepared airfields commensurate with the modern era, they did demand secured pieces of flat ground from which to operate. These aircraft took off from one such position, flew and identified targets for artillery, and then either returned to the previous location or to a new location seized during the flight. Poor coordination between those combined movements, that of the aircraft and the attacking armored division, could easily have led to the aircraft landing in enemy territory, getting shot down, or just landing with the wrong friendly unit. This demand for a secure base

[35] Gillie, *Forging the Thunderbolt*, 215. Greenfield, et al, *The Army Ground Forces*, 110-114.

[36] John S. Brown, *Draftee Division: The 88th Infantry Division in World War II* (Lexington: University Press of Kentucky, 1986) 151.

imposed limits on the movement of the armored division just as the slow ground speed of the division imposed limits on the aircraft that supported them.[37]

The cavalry community made similar arguments about the use of armor battalions to directly support infantry divisions. The cavalry's vision of armored warfare, largely adopted by the Army in the build-up towards World War II, described the role of tanks as one of exploitation, attacking targets deep in the enemy rear areas. As such, US tanks needed neither heavy protection nor a powerful anti-tank gun, as they did not intend to face enemy tanks in a head-to-head confrontation. The infantry division, from the burgeoning armor community's point of view, would only tie down any armor attached to them and prevent those tanks from participating in the sweeping exploitation that only armor could accomplish.[38]

While the armor community of the US Army developed primarily out of the cavalry branch, infantry branch had pursued its own tanks to support break-through operations. Unsurprisingly, during the fiscally tight Interwar Period branch rivalries significantly influenced the process of both equipment development and force design. In particular, the infantry branch and cavalry branch came into conflict over tightened budgets and primacy in force design. The priorities of these two constituencies, both in terms of organizational design as well as in terms of the design of tanks for the US Army, differed dramatically.

The cavalry community that ultimately dominated the development of the armored force's doctrine believed that armored formations' most efficient use consisted of sweeping

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[37] Greenfield et al describe the essential argument surrounding the integration of air support into the ground forces as one between centralization and decentralization. Kent R. Greenfield, Robert R. Palmer, and Bell I. Wiley, *The Army Ground Forces*, 110-113. Gillie, *Forging the Thunderbolt*, 215. Boyd L. Dastrup, *King of Battle: A Branch History of the U.S. Army's Field Artillery* (Fort Monroe, VA: Office of the Command Historian, United States Army Training and Doctrine Command, 1992), 207-208, 212.

[38] These two passages describe different conflicts between infantry and armor branches. The admission by Chaffee that the infantry needed their own type of tank was double edged. From one point of view it reflected an admission of equal say in the advancement of armored warfare. From another, Chaffee merely wanted to mitigate the risk that the infantry would take the cavalry's tanks. Gillie, *Forging the Thunderbolt*, 256-259, 281-282.

exploitations in the enemy rear areas. This mission called for mechanically reliable tanks with substantial road range accepting in trade relatively light armor and firepower. Similarly, organizational design supporting this mission-set indicated a need for self-contained units of all arms capable of operating for extended periods without support from higher organizations.

The conditions of World War I shaped infantry community's priorities regarding tank development and unit design. The US Army's experience there indicated the need for mobile protected firepower that would allow dismounted infantry to breach defensive works. This perspective set expectations for tanks that included powerful guns, heavy armor, and relatively low speed. Similarly, the infantry branch's view on the organization of tanks in the Interwar Period and the early part of World War II demanded separate tank battalions pooled into groups that could support infantry divisions on an as-needed basis. This put the infantry ideas in direct conflict with the ideas proposed by the cavalry with respect to having self-contained armored divisions capable of deep independent operations.[39] As George C. Marshall's designated "no" man, selected to tell these communities what they did not want to hear, General McNair found himself in the middle of this turf war.[40]

General McNair also had a fight on his hands with respect to air defense artillery and tank destroyer pooling. Infantry and armored division commanders alike noted the importance of firepower in defeated enemy strong points and counterattacks.[41] Even before American units

[39] Inter-branch rivalries and parochialism surrounded the development of the armored force from its inception. Greenfield, et al, *The Army Ground Forces*, 64-67. Timothy K. Nenninger, *The Development of American Armor, 1917-1940* (Madison: University of Wisconsin Publishing, 1968), 97.

[40] Under orders from the War Department, McNair revised the tables of organization and equipment downward and built a board to cut motor vehicles and personnel from the force. Calhoun, *General Leslie J. McNair*, 269.

[41] Tank destroyers would prove an ongoing debate with some arguing that their role ought always to have belonged to tanks themselves while others argued that tank destroyers needed independence. In either case, the opportunities to use tank destroyers as intended dwindled as the war went on suggesting to some that the entire program had been a waste. Greenfield, et al, *The Army Ground Forces*, 73-84. Mansoor, *The GI Offensive in Europe*, 17.

deployed to North Africa, US leaders and planners expressed dissatisfaction about how corps and field army headquarters would allocate those resources in combat. In particular, leaders of the armored force like Generals Devers and Chaffee expressed the need for those resources as permanent components of the armored division. Those assertions, however, did not occur in a vacuum but formed part of a chorus petitioning McNair for the wide distribution of those capabilities. General McNair's counter spoke precisely to this issue and the conceptual importance of streamlined units and pooling as a hedge against shortfalls throughout the Army, there simply being too few of those critical assets to go around.[42]

The experience of the 30th Division at Mortain demonstrated a wide variety of these capabilities integrated to make the fight work out the way it did. Not only did the 30th integrate artillery fire, it received support from a variety of pooled resources. Before the battle began, the 30th moved from its previous positions via pooled truck companies over night to arrive in the area around Mortain. They also received tank destroyer support from the 823rd Tank Destroyer Battalion and tanks from their attached 743rd Tank Battalion assigned from VII Corps.[43] The division, in this fight, integrated the tactical capabilities supplied to them from echelons above them over the course of the battle. The 30th Division received this support over other units to their right and left as VII Corps and 1st Army understood which tactical headquarters could best control the tactical fight.

[42] McNair countered these arguments from Devers and others with two essential points: that the Army could not afford the necessary shipping space for the equipment and supplies as well as the fact that the inventory had too few weapons to equip every division in like fashion. Calhoun, *General Leslie J. McNair*, 268. Greenfield, et al, *The Army Ground Forces*, 293-299.

[43] Adair, et al, "Mortain: Defensive, Deliberate Defense 30th Infantry Division, 9-13 August 1944," 7, 9.

The Two Camps

While Devers disagreed with McNair about pooling, he did so from his perspective regarding the armored forces. He believed that maximizing the lethality, sustainability, and protection of the armored force would allow US forces to attack their enemies with greater depth and maintain a higher tempo. In part, this may have reflected a parochial interest in the armored force, but in greater measure, it demonstrated his perspective that the armored force would usually be in a position to best control the tactical fight. McNair, on the other hand, attempted to provide for the entire Army with the material resources at hand. While McNair's criticism of Devers may seem like hyperbole, given the highly politicized environment he worked in, McNair could not have provided pooled resources permanently to the armored force without also providing those resources to every unit. Despite the common myth that the US won World War II through preponderance of resources, in 1942 and 1943 very real resources limitations hindered the kind of plan Devers had put forward. There simply were not enough pieces of equipment and shipping to supply all units with tanks, anti-air weapons, and tank destroyers all of the time.[44]

So instead of trying to arm these units with everything all of the time, the Armed Forces Board streamlined units down to what they believed constituted the minimum required units to fulfill an organization's basic mission. Following the war, the Army conducted a series of examinations of the best practices used during the war. Called "The General Board," these examinations developed specific recommendations about how to organize future force. Based upon experience during the war up and down the tactical echelons, the reports from The General Board on the infantry divisions and armored divisions are more startling by the similarity of their findings than for any differences. They fundamentally agree regarding the appropriate ratio of infantry to armor to artillery all the way down to the number of companies/batteries for each

[44] Calhoun, *General Leslie J. McNair*, 267.

branch regardless of the mission of the organization.[45] This similarity demonstrates a key factor often missed in the examination of US Army performance in World War II: it had mastered combined arms warfare.

Combining arms would prove one of General McNair's abiding passions. His work to create out of the US Army a truly combined-arms force began shortly after World War I and including many writings and the occasional strife within his own branch. Many modernization programs during the Interwar Period experienced inter-branch rivalry issues, and the artillery branch had its share of people who believed branch primacy more important than the effectiveness of the overall force. From this reorganization to the publication of the 1939 Field Service Regulations, the Army further refined the application of the doctrine and organizational structure required for a combined-arms force.[46]

Modern brigade combat teams represent a culmination of the school of thought of the so-called 'empire builders' of the World War II era. In contrast to this community, General McNair executed the guidance of his superiors in shaping Army forces of World War II to operate as a single integrated force. Every echelon had specific tasks and retained unique assets best used by that echelon based upon significant differences in mission among its subordinates, the reach of the specific capability, or its speed in traversing the battlefield. The Army Ground Forces headquarters designed that army to defeat and destroy the armies of peer nation-states like Germany and Japan.

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[45] US Army, *Organization, Equipment, and Tactical Employment of the Infantry Division*, 10-11. *US Army, Organization, Equipment, and Tactical Employment of the Armored Division* (The General Board, United States Forces, European Theater: APO 408, 1945), Appendix 7.

[46] While Calhoun makes the case for McNair's unique perspective in driving home the need for combined arms, Schifferle's work makes clear that this opinion was not his alone but the consensus of the Interwar Army. While die-hard branch parochialists may have complicated the development of the World War II Army, they did not reflect the majority nor did they have Army doctrine on their side. Calhoun, *General Leslie J. McNair*, 59-61. Peter Schifferle, *America's School for War: Fort Leavenworth, Officer Education, and Victory in World War II* (Lawrence: University Press of Kansas, 2010), 98-99, 192-193.

Modern Pooling

Contemporary Army forces pool capabilities like military intelligence, combat engineering, rocket and missile artillery, and aviation into echelon-above-brigade functional brigades. These formations differ from brigade combat teams in terms of mobility, reach, and uniqueness just as did the capabilities pooled for World War II-era forces. Significant change coexists, however, within this broad environment of continuity. Unlike the pooled tanks, tank destroyers, truck companies, and the like of World War II; these functional brigades fulfill requirements as both tactical force providers as well as operational and theater-level mission headquarters. This sets them apart in that they have concurrent, separate missions from the tactical echelon that demand training, doctrine, and attention.[47] Modularity and increasingly tight budgets have decreased the variety of brigade-level units in the active component, placing increasing demand for flexibility on those formations that remain. This requirement for functional and multi-functional brigades to serve in both capacities, as force providers of tactical elements of combat power as well as functional mission headquarters for needed operational and theater-level missions, dilutes the desired effect of massing combat power.

The modern Expeditionary Military Intelligence Brigade (E-MIB) reflects this dilution. Simultaneously intended to provide operational-level commanders with theater intelligence as well as serving as force pools of intelligence sub-units, these brigades must operate using tortured command and support relationships to achieve both missions. The previous incarnation of the operational-level intelligence brigade, the Battlefield Surveillance Brigade, intended to use its pooled intelligence capabilities with a cavalry squadron to answer Corps-level intelligence needs.

[47] The first passage in this manual describes the organization of the Army writ large and demonstrates the relative proportions of functional brigades, multi-functional brigades, and brigade combat teams. The second passage articulates force tailoring in its current form. As stated, force tailoring consists of bringing together the right mix of brigades. Thereafter, the manual discusses each force type in turn and describes how force tailoring applies to each. Department of the Army, FM 3-94 *Theater Army, Corps, and Division Operations* (Washington, DC: Headquarters Department of the Army, 2014), 1-1 – 1-3, 2-10 – 2-12.

The E-MIB, by contrast, has no cavalry squadron to secure its intelligence gatherers or to conduct independent reconnaissance missions. The E-MIB, then, must operate more as a force pool providing small, tactical intelligence capabilities to brigade combat teams than as an independent Corps-level reconnaissance organization. Neither their battlefield reach, their speed of employment, nor their basic mission-set differ drastically from similar capabilities employed at the brigade combat team.[48]

Similarly, military engineering has both an operational demand for construction and route improvement as well as the need to augment maneuver units with additional combat engineers and route clearance forces. The theater echelon has requirements for the construction of bases, headquarters facilities, and the improvement of roads as well as the needed project management and leadership necessary to govern those missions. Simultaneously, however, the force requires pools of combat engineer elements capable of augmenting brigade combat teams for breaching missions and route and area security. This dual mission likewise places strain on the unit headquarters to both prepare units to directly support brigade combat teams as well as to operate as division or corps support units.[49] While some engineer units do have substantially different missions from those of the brigade engineer battalion formations in brigade combat teams, they also have pools of combat engineer units retained at echelons above brigade whose capabilities match those within the brigade combat team.

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[48] Section 3-24 specifically discusses the options of providing intelligence capabilities directly forward or to provide them in support relationships. Department of the Army, FM 3-94 *Theater Army, Corps, and Division Operations*, 3-6 – 3-7. At the very outset of this passage, it describes the BfSB as filling two roles: augmenting brigade combat teams and supporting brigades as well as executing a portion of the collection plan. Department of the Army, FM 3-55 *Information Collection* (Washington, DC: Headquarters Department of the Army, 2012), A-5 – A-6.

[49] This passage within the manual describes how the engineer force may be organized depending upon the echelon of forces and the mix of required engineer capabilities. Of note in this, the system presupposes that both Corps and Division will require separate engineer efforts and that the Division may require more than one set of engineer efforts because of the complexity of the engineer task list. Department of the Army, FM 3-34 *Engineer Operations* (Washington, DC: Headquarters Department of the Army, 2014), 1-9 – 1-10.

Aviation elements, too, must deal with the parallel responsibility of providing direct aviation support to brigade combat teams as well as being prepared to commit aviation units to division or corps assigned targets and objectives.[50] Aviation, however, has solved its dilemma in a way unique to its own issues. Rather than establishing two separate headquarters to handle each responsibility like the artillery, the aviation community, like the engineers, uses one modular headquarters to flexibly employ all aviation capabilities in either capacity. For the aviation community however, this has more often retained the concept of independent action than it has its practice. While aviation brigades retain the freedom of action, doctrinally, to conduct deep attacks independent of brigade combat teams, experience in Iraq in 1991 and 2003 has suggested that this technique may entail more risk than Army leaders can accept. Aviation units, however, very clearly represent similar logic to that employed in World War II-era pooling in that their battlefield mobility does not at all match the brigade combat team.

Field artillery forces have long managed the challenge of having different battlefield reach than the maneuver forces they support. They manage this problem by appropriately echeloning artillery units to support forces with similar reach and scope.[51] In the contemporary context, that means differentiating between guns predominantly employed by the brigade combat teams and the rockets and missiles employed at division-level and above. Field Artillery branch has arrived at its own solution to the problem of diverging operational and tactical needs. As with the other branches needs with respect to support to the tactical force, the Army has identified a critical shortfall in training and readiness within brigade combat team artillery battalions. The

[50] In this manual, the Army articulates the purpose of Army aviation in terms that allow for both independent operations as well as those in direct support of a friendly ground force. The manual specifies on page 1-3 that the destroy, defeat, disrupt, divert, and delay tasks may be conducted with friendly ground forces either in or out of contact. Department of the Army, FM 3-04 *Army Aviation* (Washington, DC: Headquarters Department of the Army, 2015), 2-1 – 2-4.

[51] Echelonment of artillery assets means having a weapon whose range corresponds to the appropriate scale of organization; some weapons being more appropriate for battalions, others for brigades, and others at the division and above.

Army has responded to this shortfall by reintroducing the Division Artillery (DIVARTY) structure to provide adequate training management and oversight to brigade combat team artillery battalions.[52] Fires Brigades provide command to the rocket firing battalions and serve as Force Field Artillery Headquarters at the division and corps levels.[53] This solution, however, having one headquarters train and prepare artillery units for use by brigade combat teams while another employs operational fires units, does not work for all elements of Army combat power.

Of these modern examples of functional and multifunctional brigades, only the field artillery formations truly distinguish between units intended to directly support tactical formations and those with separate, operational missions. That said, all of these examples reflect additional pools of combat enablers withheld from the tactical echelon to, in theory, weight a main effort or allow for the reinforcement of a critical sector at a critical time. While the artillery and aviation have substantially different battlefield reach and tempo than those of the tactical echelon, engineer and military intelligence capabilities largely reflect the same battlefield reach, tempo of operations, and mission-set at both tactical and operational echelons. Why then, if their tempo of employment, battlefield reach, and primary mission all match similar capabilities employed at the tactical level; do modern Army enablers pool into separate brigades?

How the Evolution Took Place

The answer to this question, as with most things, comes from a complex mix of factors that grew together organically. First, the Army tied the term ‘brigade’ to the rank of colonel in the

[52] Of note, this new DIVARTY does not necessarily replicate the Army of Excellence mission to coordinate the fire of all division artillery battalions. This remains a point of contention within the force. Alexander Neely, “Division Artillery Returns to the Army,” *The Army Times*, July 24, 2014, https://www.army.mil/article/130514/Division_Artillery_returns_to_the_Army, accessed on November 2, 2016.

[53] Department of the Army, FM 3-34 *Engineer Operations*, 107-112, 116-117.

transition between the Pentomic and Reorganization Objective Army Division organizations.[54] As a result of this transition, an expectation arose that successful colonels, the kind of colonels that might receive promotion to brigadier general, command brigades. Once promotion to general officer depended upon successful brigade command, branch specific brigades followed logically. The Army continues to require general officers across the spectrum of technical expertise, both to provide their best military advice to policy makers as well as to guide the Army's progress for the future. This latter requirement, then, engages the critical issue for the general officer corps: who guides the Army into the future? This guidance will come from successful colonels groomed by their general officer predecessors. Without that branch specific force structure, how do all branches compete on equal footing for the limited general officer slots?[55]

This cause reflects only one of several demands that have imposed branch-specific force structure above the tactical echelon. Some of those functional or multi-functional brigades come from the National Guard. The National Guard's force structure represents a compromise between the needs of the Active Component with those of the specific state in question as well as the National Guard as a whole. The politics of these needs fall well outside the scope of this monograph, but represent real institutional demands for pooled functional capabilities outside of the brigade combat teams.

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[54] McGrath, *The Brigade*, 29-65.

[55] Vandergriff makes this point referencing Schaaf's *Review of Unified and Specified Headquarters* from 1998. This speaks specifically to the role of general officer positions in the development of force structure. For lower echelons, Centers of Excellence drive current force development system, and therefore create opportunities for colonels to receive command Officer Evaluation Reports making possible promotion to brigadier general. This gives the Centers of Excellence a say in the proportion of general officers their respective branch may have in the future force therefore providing incentive for them to create as many branch-specific colonel-level command billets as possible. Department of the Army, TRADOC Regulation 71-20 *Concept Development, Capabilities Determination, and Capabilities Integration* (Fort Monroe, VA: Training and Doctrine Command, February 2011), 25-26. Donald Vandergriff, *The Path to Victory: America's Army and the Revolution in Human Affairs* (Novato, CA: Presidio Press, Inc., 2002), 207.

Institutional requirements for force structure impose pooling on the Army in ways that it might not choose from strict effectiveness and efficiency perspectives. While those requirements may come from real needs for the future leadership of the Army, the imposition of pooling in this way unbalances the force to one extent or another. Until the Army can detach institutional needs from streamlining, pooling, and task organization; the Army will continue to struggle as it attempts to maximize its efficiency and effectiveness.

Analysis

The Army does use streamlining and pooling, within certain limits, today.[56] It does so out of a mix of causes, some institutional and some practical. That mixed causality makes definitive judgments regarding the value of any given force structure decision debatable. Any reasonable outside observer, knowing these things about how the force structure impacts the future senior leadership of the force, must ask whether any given decision represents a mission-oriented focus or an institutionally-oriented one.

In a very similar way, a valid argument exists against the modularized brigade combat teams. The Army of Excellence, developed to support the Airland Battle doctrine published in 1986, produced a very effective Army that did not provide as much in the way of supporting forces as organic forces assigned to maneuver units at the brigade level. At the same time, it allowed capabilities other than the maneuver force to operate in ways that best suited those specialties' contribution to the total force. If that worked, what practical, mission-oriented purpose do the brigade combat teams serve? The contention, at the time, reflected a vision of future war that demanded a more adaptable force, one capable of force tailoring the division to

[56] John McGrath says that the modern modular organization reflects the concept of pooling, although more as an aside than as an analytical conclusion. John McGrath, *Scouts Out: The Development of Reconnaissance Units in Modern Armies* (Fort Leavenworth, KS: Combat Studies Institute Press, 2008), 181-182.

meet the needs of the situation. Of course, this stated objective has not prevented the gradual elimination of the BfSB and MEB from the active component thereby limiting tailoring options.[57] Alternatively, do they, in fact, support the institutional needs of one or more groups within the Army over the effectiveness and efficiency of the total force? This modern expression of streamlining and pooling lends itself to dispute more than to consensus and divides the force more than it unifies it.

The key institutional moment in this transition occurred following World War II as the Army Ground Forces evaluated its performance during the war. In that moment, Army leaders noted first and most the things they felt the organizational system had failed to do, a natural inclination. What they did not see as clearly, however, was how the right answers to their tactical and operational problems had come to them. While the Army's divisions had departed the US in a lean state, pared down to essentials and ready for anything, they ended the war with a fairly uniform set of additional forces and troops.[58] Similarly, branches and stake-holders of all types came to the conclusion that the divisions at the end of the war represented a golden mean, derived through experience and that any future conflict would likely require similar proportions of the elements of combat power. That assertion disregards the fact that without streamlining, pooling, and task organization, whatever guess the Armed Forces Board had made regarding the ideal structure would have proven wrong somehow because every conflict, indeed every battle, requires something subtly different in terms of the arrangement of the elements of combat power.

[57] The first brigade combat teams entailed only two maneuver battalions, a headquarters company, and a reconnaissance troop as organic elements. The reconnaissance organization later grew into a squadron and force designers added additional support organizations. This differed substantially from the Army of Excellence model task organized for war like in the 1991 Gulf War wherein only the maneuver battalions and headquarters were organic and engineer, artillery, and sustainment support came in the form of support relationships. McGrath, *The Brigade*, 77-99. John Sloan Brown, *Kevlar Legions: The Transformation of the US Army* (Washington, DC: Center for Military History, 2011), 304.

[58] US Army, *Organization, Equipment, and Tactical Employment of the Infantry Division*, 10-11. US Army, *Organization, Equipment, and Tactical Employment of the Armored Division*, Appendix 7.

The one-size-fits-all-approach the Army arrived at after World War II simply does not reflect war as we now know it. Recent experiences and technologies have demonstrated to the US Army that force packaging in the modern era demands the capacity to scale and tailor the force to the mission. No set idealized force package will ever meet all the demands of any possible contingency or conflict. War, as a human phenomenon, demands the ability to mix the elements of combat power into the right ratios for that situation regardless of the size of the deployed contingent. Packaging forces into contingents of specific sizes that represent a minimum force combining all arms confronts policy makers, strategists, operational artists, and tacticians with a limited range of options. A force based around streamlined units task organized together when needed does not share the same limitations with respect to options of employment.

In all fairness, such a force demonstrates wholly different limitations with which the leaders coming out of World War II were all too familiar. As combat revealed, the Army in World War II often had organizational disruptions caused by the frequent task organizations. Additionally, trust and mutual communication suffered due to disparate climates, training emphasis, and expectations regarding employment. These challenges plagued the Army throughout operations and often had a negative impact on morale. All of these problems resulted in the assertion, after the war, that organizations should ideally have organic relationships with all of the units with which they habitually fight.[59]

Moving too far in that direction, however, instead of allowing the Army to deploy smaller, more discreet increments, has lent itself to the opposite problem wherein the force can now only really operate in contingents of less than 20,000 troops. This number stems from the

[59] Both primary boards evaluating the divisions from World War II concluded that the notion of 'temporary assignment' of combat elements to the divisions had been a "weakness." They did so, however, from the 20/20 hindsight of having fought with what worked on those battlefields against those enemies and with that technology. Changes in any of those categories would, perforce, have altered the balance they arrived at by the war's conclusion. US Army, *Organization, Equipment, and Tactical Employment of the Infantry Division*, 1. US Army, *Organization, Equipment, and Tactical Employment of the Armored Division*, 24.

fact that the brigade combat team is not, in fact, self-sufficient.[60] The brigade combat team still requires support from separate brigades for capabilities not organic to the team. Since it is not truly self-sufficient, a typical deployed Army force could consist of one or two brigade combat teams supported by aviation, engineer, fires, intelligence, air defense, and sustainment brigades. That force, the division, represents the smallest contingent the Army can send that incorporates all arms while fulfilling the Army's responsibilities to the joint force, despite the claims of advocates for the brigade combat team of its ability to fight in a self-contained fashion.[61] It also, however, represents the largest size commitment that can work cooperatively because the integrating resources at the corps-level suffer from the same modularity-induced troubles as those at the division-level. The movement of the BfSB and MEB to the reserve component and reduction in the number of those units has degraded the Army's ability to integrate maneuver and fires capabilities and the limited number of artillery brigades similarly reduces echelon-above-brigade fires capabilities. These limitations in the modern force structure have undercut the Army's ability to integrate all elements of combat power into one team and demonstrate how the modularity force packaging construct has degraded the Army's flexibility.

[60] While John McGrath states explicitly that the brigade combat team under modularity is intended to operate in the absence of a division, neither doctrinal publication makes this clear. In the Brigade Combat Team field manual, it says that they often operate under a division, and then goes on to describe no situations or conditions under which a brigade combat team may operate without a division. The brigade combat team depends upon functional and multifunctional brigades held by the division for critical capabilities not resident within the brigade combat team like aviation and overland logistics. John McGrath, *Scouts Out: The Development of Reconnaissance Units in Modern Armies* (Fort Leavenworth, KS: Combat Studies Institute Press, 2008), 178-182. Department of the Army, FM 3-96 *Brigade Combat Team* (Washington, DC: Headquarters, Department of the Army, 2015), 1-1. Department of the Army, ATP 3-91 *Division Operations* (Washington, DC: Headquarters, Department of the Army, 2014), 1-2.

[61] The identified paragraphs articulate a number of requirements including conducting reconnaissance, surveillance, and target acquisition; intra-theater aero-medical evacuation; logistical support to joint campaigns and operations; riverine operations; air and missile defense to joint campaigns and in the assistance of achieving air superiority; and the operation of land lines of communication. These requirements, especially providing logistical support to the joint force, change the Army's role within the joint force from one focused solely on the defeat of an adversary's land power to a much broader mission to enable the entire campaign. Department of Defense, Department of Defense Directive 5500.01 *Functions of the Department of Defense and its Major Components* (Fort Belvoir, VA: Defense Technical Information Center, Department of Defense), 29-30.

The modularity force packaging construct of putting forces into theoretically self-contained combat brigades has given the Army the comforting illusion, however implicitly, that they can operate without a broader force structure around them. This has made it acceptable, then, to continue to reduce the multifunctional and functional brigade support to those organizations because, in this force packaging design, the brigade combat teams see the least friction both in operational missions as well as in institutional issues. Brigade combat teams train and operate as teams, and, despite the fact that they incorporate multiple branches and capabilities, every other component institution of the Army understands the need for maneuver combat forces. No one will argue that the Army does not need combat brigades, they may only argue over their composition. By comparison, however, all other capabilities must justify the need for brigade-level organizations, particularly if they intend to have a say in the future of the Army flag ranks.

These institutional decisions are now hard to distinguish from those based upon improving the effectiveness or efficiency of the force. Therein lies the most insidious problem with this status. Not only has modularity undermined aspects of the combined arms force, but decisions made thereafter on force development are now subject to question. Competing institutional interests governing the future of the Army cannot govern themselves, rules of the road must govern the outcome of internal Army debates and senior Army leadership must control those disputes in such a way as to remove all questions about the origins of force design outcomes. The fact that these senior leaders all come from some constituency within the force makes a clear judgment all the more difficult. In order to effectively manage these tensions, improve the effectiveness and efficiency of the force, and mitigate the questioning of force development decisions, the Army must develop a clear force design concept and doctrinally outline its relationship to the application of combat power.

The Way Forward

In sum, the Army can make substantially better use of the ideas of streamlining, pooling, and task organization to improve the adaptability of the Army. The brigade combat team and 'unit of action' / 'unit of employment' constructs inherent to modularity have fundamentally constrained the Army into a closed architecture employing brigade-sized building blocks. These large blocks limit the extent to which a compact force can include the needed Army capabilities for a given contingency.[62] The Army needs to transition to an open architecture for its formations rather than its traditional closed one. Instead of imagining that the Army can create a perfect organization, the Army must establish an organization that can adapt more readily. Rather than building the Army in large, brigade-sized pieces optimized for a mission, the Army ought instead to invest in smaller, more interchangeable pieces of combat power.

Like Lego sets, the Army has developed in brigade units of action pre-assembled kits of combat power designed to a specific purpose.[63] Rather than these kits, however, the Army should invest in many, smaller, and interchangeable parts that they can assemble into the right shape for a given need. Instead of imagining that Army force developers can predict exactly the combat needs of any given contingency years or decades in advance, the Army ought to create an open framework to build whatever force the situation demands. Such an open framework allows the

[62] McGrath explicitly states the myth that the brigade combat team was designed to operate without a division. Without a division, however, the brigade combat team lacks aviation support and cannot connect to theater sustainment as it lacks sufficient internal transportation. This essential framework, of the brigade "unit of action" as the building block of force commitment, constrains the notion of Army force commitment for any contingency to a division-sized force since it is the smallest force that can contain multiple brigade units of action. These units of action include the Combat Aviation Brigades and Sustainment Brigades necessary for combined arms action over operational distances. Donnelly, *Transforming an Army at War*, 13. McGrath, *The Brigade*, 132. Brown, *Kevlar Legions*, 258. McGrath, *Scouts Out*, 178-182.

[63] Including both brigade combat teams as well as multi-functional brigade units of action like Fires Brigades (now Field Artillery Brigades) and Combat Aviation Brigades.

Army to recombine much smaller component elements on an as needed basis as opposed to trying to shoehorn an ill-fitting organization into the wrong combat situation.

Joint forces rely on the Army for theater sustainment, surface fires, as well as decisive land maneuver and the consolidation of gains.[64] Decisive land maneuver requires a combined arms force integrating air power, land maneuver, surface fires, over-land logistics, and the intelligence and command infrastructure to control it. Any force design solution that optimizes the latter set of requirements at the expense of the former represents purely parochial Army self-conception and not the needs of the nation. Conversely, a solution oriented strictly at the joint needs would violate the self-conception of the Army as a decisive land combat force. The ideal, then, provides a force that does both as the current Army does, but without the large, unwieldy force designs that currently constrain planners.

Into this gap, the idea of a task force framework can allow the Army to build around those fundamental requirements. Much like the Marine Corps' Marine Air-Ground Task Force, an equivalent Army task force would have components representing each of the five key attributes of Army forces: maneuver, fires, aviation, sustainment, and command.[65] Such a framework can allow the Army to build a force mixing these key components regardless of the size of commitment required. This will simultaneously establish requirements on the structure of the force in order to provide streamlined units capable of integrating into a task force of this kind.

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[64] This directive lays out the requirements of the Army for the joint force. Department of Defense, Department of Defense Directive 5100.01 *The Functions of the Department of Defense and its Major Components*, 28-29.

[65] The Marine Corps concept has air, ground, logistics, and command elements. The absence of a ground-based fires element stems from the Marine Corps history of employing close air support to make up for their relative lack of heavy weapons during their World War II island hopping campaign. Maneuver, aviation, sustainment, and command correspond to the Marine Corps' Ground Combat Element, Air Combat Element, Logistical Combat Element, and Command Element. Only the fires component reflects something not present in the Marine Air-Ground Task Force and represents a unique Army strength. James A. Warren, *American Spartans: The U.S. Marines: A Combat History from Iwo Jima to Iraq* (New York, NY: Free Press, 2005), 185-186.

Streamlining Army units could prove very unpopular. Army brigade combat teams and the colonels that command them expect certain capabilities organic to their organizations. Those commanders will not look favorably upon any action that appears to move those capabilities away from their command echelon. A revision of the force structure of this kind, however, must go beyond these kinds of parochial concerns. This recommendation does not purport to determine who commands at what echelon and with what specific forces. Such an Army task force serves to provide a framework for the Army to pursue in reorganization, not to proscribe command echelons. The problem of command echelon will depend upon the scales of task forces the Army decides to resolve upon and the staffs necessary to coordinate such a force.

In order to provide trained forces to operate within these task forces, the Army will require companies and battalions trained to similar standards. Distinguishing between the training and readiness headquarters and the headquarters employing the force will enable each of those two headquarters to focus on what they do. Much like the relationship between modern Division Artillery and the brigade combat team artillery battalions, combat regiments or groups can provide trained and ready forces for employment by the Army task force. Such a distinction offers a layer of adaptability unavailable to a force that relies upon one set of headquarters for both tasks. The Army should then establish a distinction between units that build and train these smaller components of combat power and the task force headquarters that will employ them.[66]

The Army attempted a similar approach in 2000. In this attempt, called 'Strike Force', the Army mirrored exactly the Marine Corps' Marine Air-Ground Task Force. This attempt did not result in widespread adoption of such a system for a number of reasons. The emergence of the

[66] In this passage, Vandergriff suggests the use of a regimental system to provide ready forces to combat brigades on a rotational basis. He offers several good arguments for the adoption of the regimental system including developing the readiness of the tactical force, unit cohesion, as well as officer development and training. This monograph differs from his suggestion in that it offers a broader framework to plug those ready formations into in the form of the Army Task Force, a scalable and tailorable headquarters that differs from the brigade combat team by proposing the addition of aviation and emphasizing surface fires as a key component. Vandergriff, *The Path to Victory*, 215-217.

modularity transformation superseded much of the experimentation that had been progressing up until that time. This formation also suffered under arguments from the Marine Corps that it too closely replicated Marine capabilities as well as complaints regarding the expense of operating such a formation.[67] Critically, however, such a formation failed to emphasize the unique strengths in surface-to-surface fires and theater sustainment that the Army brings to the fight.

An Army, streamlined in like-type, pooled training regiments with companies and battalions task organized into task forces for combat, could constitute the best of both worlds. Such a force confronts the historical argument against ad hoc fighting arrangements by having the task force as a continual touchstone headquarters, the same formation to which all units train to subordinate themselves. Simultaneously, it avoids committing to one force mix, allowing the force to adapt itself to the peculiar contingency of the moment.

As an important corollary to these advantages, these task forces would provide more fungible options to strategic decision-makers. Rather than the commitment of Army forces requiring a division's-worth of force for deployment, the Army can commit smaller regular-force packages to accomplish specific objectives. Such a force package could contain necessary logistics; air defense; long-range strike capabilities; an aviation force for security, strikes, and transportation; and a security force to protect the task force. While the Army has this in limited form through the Time Phased Force Deployment Data model, it cannot prepare these organizations to operate in these task forces routinely. An Army designed to operate along these lines will have the benefit of training to operate in these kinds of force packages.

Making a change like this, altering the Army's organization from the ground up, will prove difficult. An Army of the size and history of the US Army has a tremendous amount of

[67] The Army Strike Force concept mirrored the Marine Corps' Marine Air-Ground Task Force but failed in competition with modularity. In part, Marine Corps contentions regarding duplication of effort between the Corps and the Army defeated the idea. This concept differs from that in two key areas: it does not propose that the Army employ fixed-wing attack aircraft and it emphasizes Army strengths in logistics and surface-to-surface fires. Mark G. Cianciolo, "U.S. Army Strike Force—A Relevant Concept," student monograph (Fort Leavenworth, KS: School of Advanced Military Studies, 1999), 32-41.

institutional momentum. This kind of change will not only in terms of overcoming institutional momentum, however, but also in terms of the direction the Army has recently committed itself to.[68] If the Army can overcome these obstacles, however, the rewards will include an Army both more responsive to strategic demands and more adaptable to battlefield conditions. Given the current operational environment, the Army clearly needs adaptability and responsiveness.

[68] In this article, Mark Perry quotes LTG McMaster as saying "We're not going to abandon the Brigade Combat Team… It's a building block and it's a good one. It works." As this monograph has pointed out, however, the brigade combat team framework can be drastically improved upon so as to delay force mix decisions until the Army understands the specific contingency involved. Mark Perry, "Inside the Pentagon's Fight Over Russia: How the Victors of One of America's most Celebrated Battles are Facing Off on the Future of the Army," *Foreign Affairs*, accessed on 15 March 2017, http://www.politico.eu/article/inside-the-pentagons-fight-over-russia-us-eastern-europe/.

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